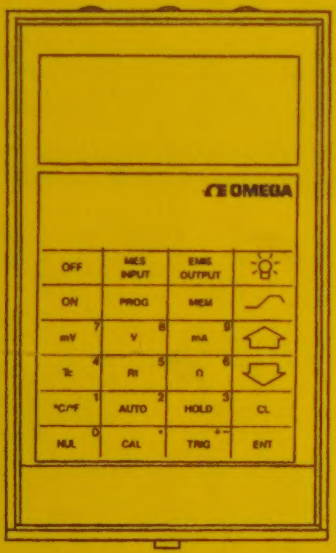
GE Electronic Services - Hayward, Ca
M21511X

CL512D

Precision Calibrator

(NOTE: this addendum is to be used with the CL511 manual)



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Operator's Manual Addendum

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CL512D Details

This operator's manual is an addendum to the CL511 Operator's Manual. The CL512D operates the same way as the CL511 but with the enhanced RS232C interface capability.

Refer to Manual Number M1048 for the CL511 information and refer to the changes noted below on the specific pages.

Page 3
Introduction

The CL512D has the same capabilities as the CL511 plus remote programming and control of the unit via the RS232C interface which is isolated from the measurement terminals.

Page 4
General Specifications

Independent regulated power supply 12V/400mA.

The CL512D can be totally controlled and programmed via the isolated RS232C interface.

Page 20
Theory of Operation

The logic board has the part number CA 41012.

Page 33
Battery Maintenance

The CL512D is designed for continuous recharging during use, regardless of the power consumption.

NOTE: If the user experiences reduced operation of the instrument, power it up, disconnect the charger and leave it until it automatically powers down. This action, which can be repeated after every 50 charge cycles, maintains the battery's full capacity.

Page 55
Operation in "Talk and Listen" Mode

In this mode, the following programs can be run from a remote device.

- Meas. memory ?
- Remote loading ?
- Calibration ?

This operating mode permits:

- running all instrument programs,
- starting measurement on a given range,
- sending one measured value or continuous measurements to an external device,
- emitting new signal values,
- simulating keypad commands.

To use the RS232C interface dialog mode, this mode must first be confirmed. To do this, run **RS232C Interface?** and confirm the **Enabling ?** prompt.

WARNING: Unless the system is reinitialized (by pressing the "ON" button), the RS232C interface remains active in this mode.

In this state, the battery consumption is significant and it is advisable to re-initialize the system after using this mode to conserve the battery.

6.10.4.1
Dialog Commands

When programming the only keys to move among the various programs are ENT, CL, ⇩ and ⇧. The number keys are used to enter numerical values.

The commands sent to the unit will therefore be:

ENT	For the **ENT** key.
CLR	For the **CL** key.
UP	For the ⇧ key.
DOWN	For the ⇩ key.
Digit, sign, decimal point	For the number keys.

The following table lists other keywords corresponding to the keypad keys.

KEYWORDS	KEYPAD	KEYWORDS	KEYPAD
NUL	NUL	DEG	°C/°F
AUTO	AUTO	HOLD	HOLD
TC	Tc	RT	Rt
OHM	Ω	MV	mV
V	V	MA	mA
CAL	CAL	TRIG	TRIG
OFF	OFF	M	MES
E	EMIS	LED	☼
PROG	PROG	MEM	MEM
RAMP	⎍		

Additional keywords:

AUTOON: automatic range set,

AUTOOFF: automatic range cancel,

HOLDON: sets the instrument to hold,

HOLDOFF: cancels the hold mode,

NULON: sets a null command,

NULLOFF: cancels a null command,

CALON: sets scaling mode,

CALOFF: cancels scaling mode,

DEGC: sets degrees C,

DEGF: sets degrees F.

In addition to these commands which give access to the unit commands from the RS232C interface, the following immediate commands for RS232C have been provided:

COMMANDS	EQUIVALENT TO PRESSING KEYS	PROGRAMS
MES:	PROG; HOLD; ENT	Meas. memory ?
ETAL:	PROG; AUTO; ENT	Calibration ?
MEM:	PROG; mV; ENT	Remote loading ?
TC:	PROG; Tc; ENT	Thermocouple ?
RT:	PROG; Rt; ENT	RTD ?
CAL:	PROG; CAL; ENT	Scaling ?
TRIG:	PROG; TRIG; ENT	Trig ?
INC:	PROG; ⌓ ; ENT	Steps ?
SYNT:	PROG; MEM; ENT	Synthesizer ?
RAMP:	PROG; _/| ; ENT	Ramps?

Every command sent to the unit must be followed by an LF. There is no need for numerical entries to be confirmed by the **ENT** key.

A group of commands can be sent together, provided that they are separated by commas. Note that program access commands include their own separator, a colon (:).

The commands may be entered in upper-case or lower-case; blanks (spaces) are not significant.

EXAMPLE: MES:UP,UP,ENT,ENT,DOWN,ENT (LF) causes the unit to transmit the average value of reading -3 (the third to the last reading stored in memory).

When the unit received a command or a group of commands it sends a NUL (00) to indicate that decoding has been performed.

Additional commands are available only on CL512D:

- commands to set the unit to the measurement mode regardless of configuration, on a manual range.

COMMANDS	MEASUREMENT RANGE
M50MV	50 mV
M500MV	500 mV
M5V	5V
M50V	50V
M500OHM	500Ω
M5KOHM	5,000Ω
M50MATA	50mA (unpowered, active transmitter)
M50MATP	50mA (with 24V power, passive transmitter)
MTC	Thermocouple (with programmed characteristics)
MRT	RTD (with programmed characteristics)

- commands for transmitting measured values:

MEAS?	sends the last measurement.
MSTART	sends continuous measurements
MSTOP	stops sending measurements.

Measurements are sent in the following format:

M=sxxxxxxx uutt

The sign "=" is replaced by "<" or ">" on overrange
s = sign (+ is implied)
x = digit and decimal point (0 is not significant)
u = unit
t = temperature probe type, RJC
or
t = powered 24V for the mA range: b or blank

- **Special commands:**

ERR? Triggers an error message.
SCR? Triggers sending display contents.

An error message assumes the value 0 if there is no error state or 1 if there is an active error.

An error (generating a beep) can be caused by:

- an incorrect command, or
- values out of limits.

The error state remains active as long as the error message has not been read.

If display contents are sent, the following symbols are represented as:

- ╪ by b,
- ┘ by ⌈ (ASCII code 218)

After each command, assuming there is no error, the next query (the only normally appearing on the display in manual use), will be sent and after entering a numeric value, if there is no error, the value is sent back in echo, followed by a new query.

Notes

Notes

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